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Original article

A PROSPECTIVE STUDY ON CERVICAL TUBERCULAR LYMPHADENOPATHY.

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Abstract

Background :

India has the highest incidence of tuberculosis in the globe, with twenty percent of cases. In India, tuberculous lymphadenitis is the most prevalent extrapulmonary variant of tuberculosis. The purpose of this study is to share our knowledge regarding tuberculous cervical lymphadenitis.

Methods:

This hospital-based prospective investigation was conducted for one year in the Department of General Surgery at MRMCH, Daltonganj. All cases of neck edoema or cervical lymphadenitis selected for the study were initially treated conservatively with antibiotics and evaluated after two weeks. If the neck edoema persists, FNAC, USG, and occasionally a biopsy is performed.

Results :

Out of 120 study cases, infectious or inflammatory aetiology was observed in 47.5%, tuberculous lymphadenopathy in 33.333%, metastatic nodes in 13.335%, lymphoma in 1.67%, and non-specific lymphadenitis in 4.17 % of cases. A clinico-epidemiological analysis of 40 cases of tuberculous lymphadenopathy revealed that those between the ages of 15 and 24 were most frequently affected. 68% of the cases were female and 32% were male. 15 cases out of 28 that were older than 15 years old were illiterate. Level V cervical lymph nodes were most commonly involved. Ultrasonography of tuberculous lymph nodes revealed hypoechogenicity and necrosis in all cases, matted lymph nodes in forty percent of cases, calcifications in twenty-seven percent of cases, and pointed margins in sixty-seven percent of cases. Tests for tuberculin were only positive in 73% of cases.

Conclusion:

In developing nations like India, there is a high prevalence of tuberculous cervical lymphadenitis among patients with enlarged neck lymph nodes. Adenopathy of the cervical lymph nodes is the most prevalent manifestation of the extrapulmonary form of tuberculosis. Therefore, it is essential that otolaryngologists are aware of tuberculosis in the head and neck region, which can aid in early diagnosis with the assistance of simple investigations, allowing patients to be promptly and effectively treated.

Keywords: Tuberculosis, cervical lymphadenopathy, FNAC, Submission: 2023-06-24 Accepted: 2023-06-27

1. Introduction:

The most prevalent extrapulmonary manifestation of tuberculosis is lymphadenitis. It remains a diagnostic and therapeutic challenge due to its

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similarity to other pathologic processes and inconsistent physical and laboratory manifestations. A sputum-positive (open) case of pulmonary tuberculosis serves as the source of infection for tuberculosis. Direct inhalation of aerosolized bacilli containing droplet nuclei is the mode of infection [1].

The cervical lymph nodes are most commonly affected by tuberculous lymphadenitis [2, 3]. Tuberculous lymphadenitis resembles other pathological conditions and produces inconsistent physical and laboratory findings. The differential diagnosis for tuberculous lymphadenitis includes metastases from other primary sites, reactive lymphadenitis, chronic non-specific lymphadenitis, lymphoma, and sarcoidosis, among others [1].

Throughout the past several decades, tuberculosis has decreased due to the development of economic and social conditions and the use of effective anti-tubercular therapy. Since the onset of the acquired immunodeficiency syndrome epidemic, it has become apparent that extrapulmonary manifestations account for a large proportion of new cases. Therefore, it is essential that otolaryngologists are aware of the various manifestations of tuberculosis in the head and neck region. To establish the diagnosis of tuberculosis in cervical lymphadenopathy [4], various laboratory procedures such as routine blood investigation with ESR, Fine needle aspiration cytology (FNAC), Ultrasonography of cervical lymph node, Mantoux test, Excision biopsy, Chest X-ray, etc. are performed [5, 6, 7]. The purpose of this investigation was to examine the prevalence of tuberculosis in cases of cervical lymph node adenopathy.

2. Materials and Methods:

This one-year prospective hospital investigation was conducted in the Department of General Surgery at MRMCH, Daltonganj. This study was conducted among 120 patients over a one-year period from December 2021 to December 2022.

As samples, this study included all cases of neck enlargement or cervical lymphadenitis seen at the Outpatient and Inpatient Departments of Department of General Surgery at MRMCH, Daltonganj that met the inclusion and exclusion criteria.

Inclusion criteria: Patients who presented with cervical lymphadenopathy regardless of sex, caste, religion, socioeconomic status, duration of illness, or severity were included in the study.

Exclusion criteria: Children younger than five years of age were precluded from the study. Patients with cervical lymphadenopathy and suspicious features of malignancy, such as an evident growth or ulcer in the head and neck region, as well as pregnant women, were excluded from the study.

2.1. Methodology:

After satisfying inclusion and exclusion criteria, all patients selected for the study underwent a thorough history and clinical examination and were prescribed initial conservative management with antibiotics (tab. Amoxicillin + clavulanic acid 625 mg thrice daily for 5 days) and were followed for two weeks.

Patients were subsequently followed up on after two weeks. If the edoema subsided, then the cases were ruled out. If the edoema persisted, cervical lymph node investigations such as FNAC and USG were advised. If results were inconclusive, lymph node biopsy and HPE were recommended. In addition to a chest X-ray, tuberculin test, sputum for AFB, and an ESR blood test, some ancillary tests were recommended.

The FNAC report was the primary diagnostic tool. All cases were reported by the Department of General Surgery, MRMCH, Daltonganj, Jharkhand, India. If pus/nodal aspirate demonstrates ZN stain positivity for AFB and/or granulomatous alterations with Langhans giant cells, tuberculosis is confirmed. If the FNAC report was inconclusive, a confirmation excision biopsy was recommended. Patients with cervical node TB were prescribed an antitubercular treatment (ATT) regimen in accordance with WHO recommendations.

Patients with reactive lymph nodes or an acute bacterial infection improved after receiving antibiotics and anti-inflammatory medications as part of conservative treatment. Patients with

metastatic lymph nodes on cytology were further evaluated for the primary tumour site and treated accordingly. Those with lymphoma were appropriately treated with chemotherapy.

2.2. Statistical Analysis:

For the statistical analysis, Microsoft Office 2007 was used. For the interpretation of results, the mean and percentages were computed. We used descriptive statistics to summarise the data.

3. Results:

This hospital-based prospective study analysed the incidence of tuberculosis in 120 patients who presented with cervical lymph node adenopathy over a one-year period at the Department of General Surgery at MRMCH, Daltonganj. All of the cases selected for the study after satisfying the inclusion and exclusion criteria were handled in accordance with the described methodology. The subsequent tables present the documented results.

According to the protocol, all 120 cases underwent FNAC of the cervical lymph node. 57 cases (47.5%) had infectious or inflammatory pathology, 40 cases (33.33%) had tuberculosis, 16 cases (13.33%) had metastatic lymph nodes, 2 cases (1.67%) had lymphoma, and 5 cases (4.17%) had nonspecific lymphadenitis. The biopsies and histopathological examinations performed on these 5 cases yielded nonspecific or equivocal results [Table 1].

Following FNAC and HPE analysis of the 120 cases selected for the study, it was determined that 57 cases (47.5%) had infectious or inflammatory lymphadenopathy, 40 cases (33.33%) had tuberculosis, 16 cases (13.33%) had metastatic node, 5 cases (4.17%) had non-specific lymphadenitis, and 2 cases (1.67%) had lymphoma.

15-24 years old was the age group most frequently involved, followed by 0-14 years, 25-34 years, 35-44 years, 45-54 years, and 55-64 years old. Our study's epidemiological analysis revealed that 13 cases (32%) were male, and 27 cases (68%) were female. In our study, 15 cases were illiterate (5 cases were male and 10 cases were female), 9 cases were under-matriculated (4 cases were male and 5 cases were female), and 4 cases were matriculated (1 case was male and 3 cases were female). In our study, level V CLN involvement was the most prevalent (52.5%), followed by level III (27.5%), level I (7.5%), level IV (7.5%), level II (2.5%), and level VI (2.5%).

All forty cases of tuberculous lymphadenopathy underwent lymph node ultrasonography. All forty cases were found to have hypoechogenicity and necrosis. In 16 cases (40%), the lymph nodes were matted. While calcifications were observed in 11 patients and acute margins were observed in 27 patients, 11 patients had calcifications [Table 2].

The tuberculin test was administered on all 40 cases of tuberculous lymphadenopathy, but only 73% of the cases were positive. 52% of the 40 cases of tuberculous lymphadenitis had a tuberculosis family history. 16% of patients had chest X-ray findings suggestive of concurrent pulmonary tuberculosis, according to the investigation. Sputum was positive for AFB in 14% of cases, and ESR was elevated in 74% of cases.

4. Discussion:

This one-year study was conducted to determine the incidence of tuberculosis in patients with cervical lymphadenopathy at the Department of General Surgery at MRMCH, Daltonganj. Wide differential diagnoses for cervical lymphadenopathy make it difficult for the clinician to arrive at a definitive diagnosis and treatment. Developed nations and the majority of developing nations have experienced a decline in pulmonary tuberculosis for several decades, as a result of improved economic and social conditions and the DOTS programme [8, 9, 10, 11]. With the emergence of the acquired immunodeficiency syndrome epidemic, it is now evident that extra-pulmonary manifestations account for the majority of new cases. Tuberculous lymphadenopathy is the most prevalent extrapulmonary form of tuberculosis, and cervical lymph nodes are the most frequently affected lymph node group [12, 13].

In our investigation, 120 cases that met the inclusion and exclusion criteria were selected. Based on FNAC and HPE results, it was de-

Table 1: **Correlation in FNAC diagnosis and histopathology diagnosis**

Diagnosis	FNAC diagnosis	HPE diagnosis	Final diagnosis
Infective/inflammatory lymphadenopathy	57	-	57
Tuberculosis	40	-	40
Metastatic node	16	-	16
Non-specific lymphadenitis	5	5	5
Lymphoma	2	-	2

Table 2: **USG ftndings of cases of tubercular lymphadenopathy**

USG ftndings	No. of patients
Hypoechogenicity	40
Necrosis	40
Matting	16
Calcification	11
Sharp margins	27

termined that 47.5% of cases had infectious or inflammatory lymphadenopathy, followed by tuberculous lymphadenopathy in 33.333% of cases, metastatic nodes in 13.33% of cases, and lymphoma in 1.67% of cases. Five cases of non-specific lymphadenitis were detected through FNAC and HPE [14, 15].

Similar to our findings, Sharma et al. found that lymph node TB accounts for 35% of extra-pulmonary TB, of which two-thirds involve cervical lymph nodes [5, 16]. In their study, however, Sarda et al. [6] reported an extremely high incidence of tuberculous lymphadenitis, with 86% of enlarged lymph nodes showing tuberculous origin. This could be owing to effective clinical lymph node screening. Dandapat et al. [7] reported an incidence of 41.5%, Jha et al. [8] reported 63.0%, and Castro et al. [9] reported 46.0%.

In a study conducted by Haque et al. [10], the incidence of tuberculous lymphadenitis in swollen lymph nodes of the neck was extremely low, at 3.5%. This may be due to the examination of all lymph nodes regardless of the duration of lymph node enlargement, resulting in a high incidence of inflammatory characteristics (87.18%). In his 20-year study, Gallesio et al. [11] also reported a relatively low incidence, 21%. Our investigation revealed that the age group 15 to 24 years comprised 40% of all cases.

In their study, Khajanchi et al. [12] discovered that cervical lymphadenopathy is more prevalent among youthful and middle-aged adults, and its incidence decreases with increasing age. In our study, we discovered that tuberculous lymphadenopathy affects females more frequently than males. 68% of the cases were female and 32% were male. This observation is comparable to the findings of Abdullah et al. (59.3 percent females and 40.7 percent males, for a sex ratio of 0.69) [13]. This high percentage of females with tuberculous lymphadenopathy may be attributable to their work in close quarters, particularly cooking, in lower socioeconomic strata. This is exacerbated by the lack of health care facilities for women in rural areas. However As in studies by Dandapat et al. [7], Bezabih et al. [14], and Pandit et al. [15], the male-to-female ratio is found to be low with no apparent preponderance.

Our study revealed that among the 28 cases of individuals older than 15 years, 15 were illiterate, 9 were under-matriculated, and 4 were matriculated. Epidemiological analysis of the

cases reveals that illiteracy and lack of awareness are directly related to a higher prevalence of extrapulmonary tuberculosis in the form of lymphadenopathy.

In our study, CLN level V (52.5%) was the most prevalent, followed by level III, level I, level IV, level II, and level VI. In the study by Maharajan et al., involvement of the cervical groups of lymph nodes was found to be most prevalent in the posterior triangle group of lymph nodes [1, 9, 16, 17, 18, 10, 7].

Fine needle aspiration cytology (FNAC) is widely regarded as the most precise, sensitive, specific, and cost-efficient method for diagnosing lymphadenopathy. FNAC was conducted on all of our cases, and 82% of the forty cases of tuberculous lymphadenopathy exhibited epitheloid granuloma and Langhen's cell, with or without necrosis. 32.5% of samples demonstrated a positive ZN stain for AFB. Studies by Weiler et al. [19], Jha et al. [8], Al- Mullhim et al. [20], Bezabih et al. [14], and Dandapat et al. [7] reveal comparable findings.

In our study, ultrasonography (USG) was performed on all cervical lymph nodes. All forty cases (100%) were found to have hypoechogenicity and necrosis. In 16 cases (40%), the lymph nodes were matted. While calcifications were observed in 11 patients (27.5%), 27 patients (67.5%) had pointed margins. Likewise, Gupta et al. [21] found hypoechogenecity in all cases, calcification in 29.6% of cases, nodal matting in 37% of cases, and a pointed border in 29.6% of cases in their study.

The tuberculin test was administered on all 40 cases of tuberculous lymphadenopathy, but only 73% of the cases were positive. In the study by Abdullah et al. [13], the Mantoux test was positive in 73 of 79 tuberculosis patients (92.4%). A relatively reduced proportion of positive tuberculin tests may be the result of patients failing to appear for interpretation after 48-72 hours. 52% of the forty cases of tuberculous lymphadenitis had a family or exposure history of tuberculosis. 16% of patients had chest X-ray findings suggestive of concurrent pulmonary tuberculosis, according to the investigation. Sputum was positive for AFB in 14% of cases, and ESR was elevated in 74% of cases.

Maharajan et al. [1] found similar results with a family history in fifty percent of cases, positive chest X-ray findings in fourteen percent of cases, and positive sputum for AFB in thirteen percent of cases. Subsequently, all forty cases of tubercular lymphadenopathy were treated with anti-tubercular therapy (ATT) under DOTS, which consisted of the drugs isoniazide, rifampicin, pyrazinamide, and ethambutol administered thrice weekly for two months (intensive phase) and isoniazide and rifampicin administered thrice weekly for four months (continuation phase).

5. Conclusion:

In developing nations like India, there is a very high incidence of tuberculous cervical lymphadenitis in patients with enlarged neck lymph nodes. There is a decline in pulmonary tuberculosis in developing countries as a result of improved economic and social conditions and the DOTS programme, but there is an increase in the incidence of extrapulmonary tuberculosis. The most prevalent manifestation of extrapulmonary tuberculosis is lymph node involvement, with cervical lymph nodes being the most commonly affected group. Tuberculous lymphadenitis resembles other pathological conditions, such as metastasis from other primary locations, reactive lymphadenitis, chronic nonspecific lymphadenitis, lymphoma, etc.

6. Recommendation:

Consequently, otolaryngologists must be aware of tuberculosis in the head and neck region. If the otolaryngologist maintains a high index of suspicion, a prompt diagnosis can be made with the aid of straightforward investigations, and patients can be treated without delay.

7. Acknowledgement:

None

8. List of abbreviations:

FNAC- Fine-needle aspiration cytology
USG- Ultrasonography
HPE- Holoprosencephaly
AFB- Acid- Fast Bacilli
ESR- Erythrocyte sedimentation rate
ZN- Ziehl–Neelsen
ATT- Antitubercular treatment
CLN- Cervical Lymph Node

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